

what polluted water of the lake was responsible; or if some less obvious cause operated. The investigation of the winter condition was also contemplated, but a return to the lakes for a longer period was not possible until 1918, and by that time distinct changes had taken place. The pond-lily bed had been greatly reduced; only three living specimens of *F. parallela* were found just opposite the mouth of the creek; no living *F. fusca* remained; and the contemplated observations could not be carried on. Only a few dead shells were dredged from the mud of the bottom. It was evident that the lake had been greatly polluted, a condition which has since grown still worse, and the creek, moreover, had been polluted by stock.

Three efforts were made subsequently, one in 1928, another in 1932, and still another in 1934, but no more living Ferrissias were found, and, as noted in another article, all molluscan life had been destroyed in the lake by sewage-pollution.

During all the years of field experience in this region, the writer has found but few specimens of *F. fusca* at any other point, and only a single additional *F. parallela*, dead and bleached, was dredged in Millers Bay, some years ago, near a small bed of *Nymphaea*, now also extinct.

Elsewhere in Iowa *F. rivularis* seems to be confined to streams, often small creeks; *F. fusca* is usually found on aquatic plants, especially *Nymphaea advena* and *Castalia*, in ponds or shallow lakes; while *F. parallela* has not been observed in any other localities than those cited. None of these Ferrissias is really common.

THE GENERIC POSITION OF PLANORBIS UMBILICATELLUS WITH THE DESCRIPTION OF A NEW GROUP OF PLANORBIDAE

BY FRANK C. BAKER

The little fresh water shell known as *Planorbis umbilicatellus* Ckll. has been considered a *Gyraulus* by most conchologists. In a recent paper (Proc. Phil. Acad. Sci., 86: 48, 1934), Pilsbry suggests that this species, together with others, calls for generic verification. Specimens of *umbilicatellus* from Wainwright Park, Alberta, and North Star Lake, Minn., have been examined ana-

tomically. The species is not a *Gyraulus* and belongs to the *Helisoma* group of Planorbidae having a well developed penial gland. The form of the shell is not at all like that of *Gyraulus* but more like that of *Menetus* without a peripheral keel.

An anatomical examination of several species of *Menetus* indicates that this group is divisible into two subgroups, if not into two separate genera. In *Menetus*, of which *Palorbis opercularis* Gould is the type, the penial gland is greatly elongated, somewhat sausage-shaped when fully formed, and almost completely filling the preputial sac, which is regularly elongated. It has a cup-shaped termination opening at the proximal end from which a long, narrow duct extends through the body of the gland to the distal end. This duct enters the muscular collar or diaphragm between the preputial and penial sacs.

In the group typified by *Planorbis exacuus* Say the penial gland is short and rounded, the cup or opening extends the whole length of the gland and there is no duct, its place being taken by an open canal or channel which is bordered by heavy, fleshy muscles connecting the gland with the muscular collar between the two sacs. The preputial sac is also much swollen and the penial gland fits into a recess or "pocket" on the side to which the retractor muscle is attached. In *Menetus* the vas deferens enlarges as it enters the vergic sac, forming an "epiphallus" as in some land snails. This feature is absent in *Planorbis exacuus* and related species.

It should be noted that the penial gland is more or less variable in form in the same species. It may be small and subglobular and placed in the upper part of the preputial sac or it may be greatly lengthened and completely fill the preputial sac. Such a condition was observed in specimens of *opercularis*. Of *planulatus* 15 specimens were dissected and the penial sac varied 60 per cent in length. Probably the gland is enlarged to a greater degree during the breeding season. All specimens, however, were from the same lot collected at the same period.

Of the genus *Menetus* the following species and races have been dissected:

M. opercularis (Gould). Mountain Lake, California.

M. planulatus (Cooper). Crescent City, Cal., and Quataino, Vancouver Island.

M. p. multilineatus (Vanatta). Orcas Island, Puget Sound, Washington.

It is here proposed to call the group with the subglobular gland and absence of duct PROMENETUS with *Planorbis exacuus* Say as type. About two dozen specimens of *exacuus* and *e. megas* have been dissected. *Planorbis umbilicatellus* falls into this new group having the same form of penial gland and absence of duct, and also the same form of vas deferens. Promenetus is more nearly related to Planorbula than it is to Menetus, Planorbula having the same form of penial gland and preputium. Full details with figures of Menetus and Promenetus will be published in a work on the Planorbidae now in preparation.

A NEW VARIETY OF MONADENIA FIDELIS FROM CURRY COUNTY, OREGON

BY E. P. & E. M. CHACE

MONADENIA FIDELIS BERYLLICA, n. subsp.

Differs from other races of *fidelis* in the basal coloration, which is deep green, hellebore green of Ridgway being the predominating shade. Upper surfaces ranging from brown to straw in color but always with a tinge of green. All other characters varying as in the *fidelis* of Del Norte Co., Calif.

Type No. 122A in the collection of the writers, measures: maximum diameter 38.1 mm., minimum diameter 32.3 mm., altitude 29 mm.

Paratypes are in the collections of the ANSP., Dr. S. S. Berry, and Mr. Allyn G. Smith. These and eighty other specimens were collected in a patch of trees and brush near the mouth of Pistol River, Curry Co., Oregon. In this colony the mature shells were quite uniform in size (35 to 40 mm. in diameter) and light-colored tops predominated.

Mr. Smith found a colony of very similar shells beside the highway three miles north of Wedderburn. We visited this colony later, finding conditions and shells very similar to those at Pistol River.

In a colony near the mouth of Hunter's Creek (three miles south of Gold Beach) the shells are more variable in top coloration and the green is a little less prominent.

The colony at Port Orford looks very much like *fidelis* var.